Chapter 13
DVMRP Configuration Guidelines

To configure DVMRP, you include statements at the [edit protocols dvmrp] hierarchy level of the configuration. You can include the following statements in the configuration:

```
protocols {
    dvmrp {
        disable;
        export [policy-name];
        import [policy-name];
        interface interface-name {
            disable;
            hold-time seconds;
            metric metric;
            mode (forwarding | unicast-routing);
        rib-group group-name;
        traceoptions {
            file name <replace> <size size> <files number> <no-stamp>
                <(world-readable | no-world-readable)>;
            flag flag <flag-modifier> <disable>;
        }
    }
}
```

By default, DVMRP is disabled.

This chapter describes the following tasks for configuring DVMRP:

Minimum DVMRP Configuration

To enable DVMRP on an interface, include at least the following statements in the configuration. All other DVMRP configuration statements are optional.

```
[edit]
routing-options {
    interface-routes {
        rib-group group-name1;
    }
    rib-groups {
        group-name1 {
            import-rib [ inet.0 inet.2 ];
        }
        group-name2 {
            import-rib inet.2;
            export-rib inet.2;
        }
    }
}
protocols {
    dvmrp {
        rib-group group-name2;
        interface interface-name;
    }
}
```

The ports of a DVMRP router can be either a physical interface to a directly attached subnetwork or a tunnel interface to another multicast-capable area of the MBone. All interfaces can be configured with a metric specifying cost for receiving packets on a given port. The default metric is 1.

Create Routing Tables for DVMRP Routes

DVMRP needs to access route information from the unicast routing table, inet.0, and from a separate routing table that is reserved for DVMRP. You need to create the routing table for DVMRP, and to create groups of routing tables so that the routing protocol process imports and exports routes properly. We recommend that you use routing table inet.2 for DVMRP routing information.

To create the necessary routing tables and routing table groups for DVMRP, include the following statements at the [edit routing-options] hierarchy level:

```
[edit]
routing-options {
    interface-routes {
        rib-group group-name1;
    }
    rib-groups {
        rib-group group-name1 {
            import-rib [ inet.0 inet.2 ];
        }
        rib-group group-name2 {
            import-rib inet.2;
            export-rib inet.2;
        }
    }
}
```

To associate the routing tables with DVMRP, include the rib-group statement at the [edit protocols dvmrp] hierarchy level, as described in “Enable DVMRP” on page 75.

Enable DVMRP

To enable DVMRP on the router, include the following statements at the [edit protocols] hierarchy level:

```
[edit protocols]
dvmrp {
    interface interface-name;
    rib-group group-name2 ;
    traceoptions;
}
```

The rib-group statement selects a routing table group. DVMRP exports routes from this group and imports routes to this group. The rib-group statement associates with DVMRP the routing table group that imports and exports routes into the specified routing table group. This is a group you defined with the rib-groups statement at the [edit routing-options] hierarchy level.

You must specify the interface or interfaces on which to enable DVMRP. Specify the full interface name, including the physical and logical address components. To configure all interfaces, specify the interface name all. For details about specifying interfaces, see the *JUNOS Internet Softw are Configur ation Guide: Interf aces and Class of Service* .

If you have configured PIM on the interface, you can configure DVMRP in unicast-routing mode only. You cannot configure PIM and DVMRP in forwarding mode at the same time.

Modify the DVMRP Hold-Time Period

The DVMRP hold-time period is the amount of time a neighbor should consider the sending router (this router) to be operative (up). The default hold-time period is 35 seconds.

To modify the hold-time value for the local router, include the hold-time statement at the [edit protocols dvmrp interface *interface-name*] hierarchy level:

```
[edit protocols dvmrp interface interface-name]
hold-time seconds;
```

The hold-time period can range from 1 through 255 seconds.

Modify the Metric Value

For each source network reported, a route metric is associated with the unicast route being reported. The metric is the sum of the interface metrics between the router originating the report and the source network. A metric of 32 marks the source network as unreachable, thus limiting the breadth of the DVMRP network and placing an upper bound on the DVMRP convergence time.

By default, a metric value of 1 is associated with each DVMRP route. To modify the metric value, include the metric statement at the [edit protocols dvmrp interface *interface-name*] hierarchy level:

```
[edit protocols dvmrp interface interface-name]
metric metric;
```

The metric can range from 1 through 31.

Disable DVMRP on an Interface

To disable DVMRP on an interface, include the disable statement at the [edit protocols dvmrp interface *interface-name*] hierarchy level:

```
[edit protocols dvmrp interface interface-name]
disable;
```

Configure DVMRP Routing Policy

All routing protocols use the routing table to store the routes that they learn and to determine which routes they should advertise in their protocol packets. Routing policy allows you to control which routes the routing protocols store in and retrieve from the routing table.

When configuring DVMRP routing policy, you can apply routing policies. To do this, include the import and export statements at the [edit protocols dvmrp] hierarchy level.

To apply policies to routes imported into the routing table from DVMRP, include the import statement, listing the names of one or more policy filters to be evaluated. If you specify more than one policy, they are evaluated in the order specified, from first to last, and the first matching policy is applied to the route. If no match is found, DVMRP shares with the routing table only those routes that were learned from DVMRP routers.

```
[edit protocols dvmrp]
import [ policy-names ];
```

To apply policies to routes exported from the routing table into DVMRP, include the export statement, listing the names of one or more policies to be evaluated. If you specify more than one policy, they are evaluated in the order specified, from first to last, and the first matching policy is applied to the route. If no match is found, the routing table exports into DVMRP only the routes that it learned from DVMRP and direct routes.

```
[edit protocols dvmrp]
export [ policy-names ];
```

Configure DVMRP Routing Modes

You can configure DVMRP for either forwarding or unicast routing mode. In forwarding mode, DVMRP operates its protocol normally (for example, it does the routing as well as multicast data forwarding). In unicast routing mode, you can use DVMRP for unicast routing only; forward multicast data by enabling PIM on that interface.

To configure DVMRP for multicast forwarding, include mode forwarding at the [edit protocols dvmrp interface *interface-name*] hierarchy level.

```
[edit protocols dvmrp interface interface-name]
mode forwarding;
```

To configure DVMRP for unicast routing, include mode unicast-routing at the [edit protocols dvmrp interface *interface-name*] hierarchy level.

```
[edit protocols dvmrp interface interface-name]
mode unicast-routing;
```

The default mode is forwarding.

Trace DVMRP Protocol Traffic

To trace DVMRP protocol traffic, you can specify options in the global traceoptions statement at the [edit routing-options] hierarchy level, and you can specify DVMRP-specific options by including the traceoptions statement at the [edit protocols dvmrp] hierarchy level:

```
[edit protocols dvmrp]
traceoptions {
   file name <replace> <size size> <files number> <no-stamp>
      <(world-readable | no-world-readable)>;
   flag flag <flag-modifier> <disable>;
}
```

You can specify the following DVMRP-specific options in the DVMRP traceoptions statement:

all—Trace everything.

general—Trace general events.

graft—Trace graft messages.

neighbor—Trace neighbor probe messages.

normal—Trace normal events.

packets—Trace all DVMRP packets.

poison—Trace poison-route-reverse packets.

policy—Trace policy processing.

probe—Trace probe packets.

prune—Trace prune messages.

report—Trace DVMRP route report packets.

route—Trace routing information.

state—Trace state transitions.

task—Trace routing protocol task processing.

timer—Trace routing protocol timer processing.

For general information about tracing and global tracing options, see the *JUNOS Internet Software Configuration Guide: Routing and Routing Protocols*.

Configuration Examples

This section contains the following DVMRP configuration examples:

Example: Trace DVMRP Protocol Traffic on page 78

Example: Configure DVMRP on page 79

Example: Configure DVMRP to Announce Unicast Routes on page 80

Example: Trace DVMRP Protocol Traffic

Trace only unusual or abnormal operations to routing-log, and trace detailed information about all DVMRP messages to dvmrp-log:

```
[edit]
routing-options {
    traceoptions {
        file routing-log;
    }
}
protocols {
    dvmrp {
        traceoptions {
            file dvmrp-log;
            flag packets;
        }
        interface so-0/0/0;
    }
}
```

Example: Configure DVMRP

Configure DVMRP on the router:

```
[edit]
routing-options {
    interface-routes {
        rib-group ifrg;
    }
    rib-groups {
        rib-group ifrg {
            import-rib [ inet.0 inet.2 ];
        }
        rib-group dvmrp-rib {
            import-rib inet.2;
            export-rib inet.2;
        }
    }
}
protocols {
    sap;
    dvmrp {
        rib-group dvmrp-rib;
        traceoptions {
            flag normal;
            flag state;
        }
        interface ip-f/p/0.0 {
            hold-time dvmrp 130;
        }
    }
}
```

Example: Configure DVMRP to Announce Unicast Routes

In this example, DVMRP is used to announce unicast routes used solely for multicast RPF. Include the statement mode unicast-routing at the [edit protocols dvmrp interface] hierarchy level. Redistribute static routes by including the static statement at the [edit routing-options] hierarchy level to export the routes to all DVMRP neighbors.

```
routing-options {
    rib inet.2 {
        static {
            route 0.0.0.0/0 discard;
        }
    }
    rib-groups {
        pim-rg {
            import-rib inet.2;
        }
        dvmrp-rg {
            export-rib inet.2;
            import-rib inet.2;
        }
    }
}
protocols {
    dvmrp {
        rib-group inet dvmrp-rg;
        export dvmrp-export;
        interface all {
            mode unicast-routing;
        }
    }
    pim {
        rib-group inet pim-rg;
        interface all;
    }
}
policy-options {
    policy-statement dvmrp-export {
        term 10 {
            from {
                protocol static;
                route-filter 0.0.0.0/0 exact;
            }
            then accept;
        }
    }
}
```